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FAO PLANT PROTECTION BULLETIN

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A PUBLICATION OF THE WORLD REPORTING SERVICE ON PLANT DISEASES AND PESTS

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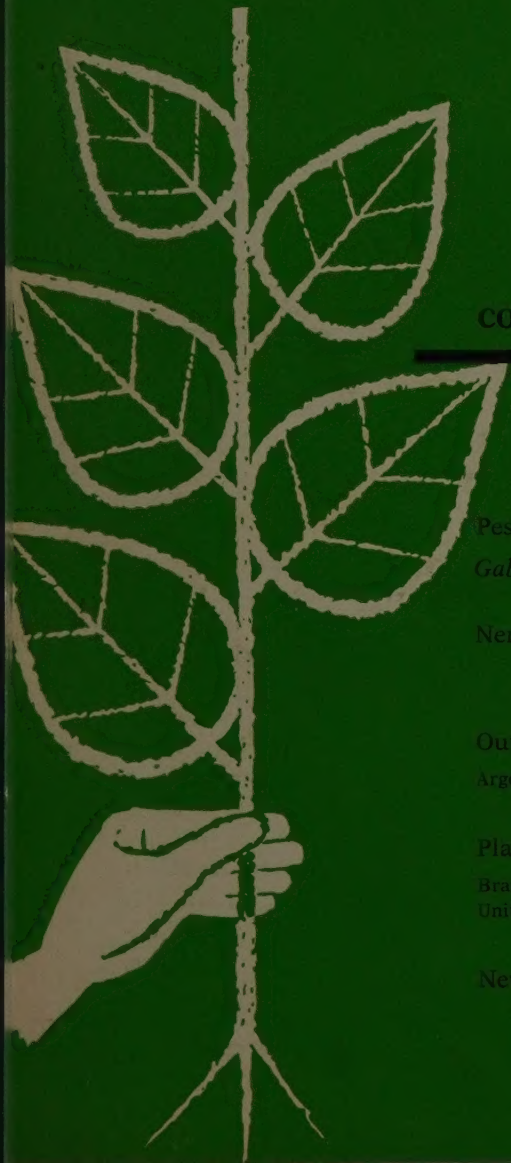

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FAO PLANT PROTECTION BULLETIN

is issued as a medium for the dissemination of information received by the World Reporting Service on Plant Diseases and Pests, established in accordance with the provisions of the International Plant Protection Convention, 1951. It publishes reports on the occurrence, outbreak and control of pests and diseases of plants and plant products of economic significance and related topics, with special reference to current information. No responsibility is assumed by FAO for opinions and viewpoints expressed in the Bulletin.

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FAO PLANT PROTECTION BULLETIN

A PUBLICATION OF THE WORLD REPORTING SERVICE ON PLANT DISEASES AND PESTS

Pests of Grapevine in Chile

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Some of the pests affecting grapevine in Chile are indigenous or of neotropic origin and others are practically cosmopolitan. As grapevines are grown in Chile under a wide range of latitudes and altitudes, most of these pests are of local importance or have only restricted distribution.

Fortunately, one of the most destructive and widespread grapevine pests, *Phylloxera vastatrix*, does not occur in Chile. This fact can be attributed mainly to the rigid preventive measures adopted by the government during the last 60 years in relation to *Phylloxera* rather than to geographic factors.

The present article discusses pests in the order of their importance in Chile at the present time, and reviews their most significant ecological aspects.

Grape mite

The grape mite *Brevipalpus chilensis* Baker was described in 1949 by Baker [1] on the basis of material intercepted by the United States Department of Agriculture and also on material collected in the vineyard of Talca in 1913 and deposited with the United States National Museum. This species is presumably the same as that previously reported by Rivera [2] as *Tetranychus vitis* and by Lavergne [3] as *T. telarius*.

Brevipalpus chilensis occurs in the entire central area of Chile on many host plants in addition to grapevine. The eggs are reddish and ellipsoidal, measuring 14 × 10 μ. The six-legged larvae are at first reddish and later become typically dotted. Characteristics and location of setae are the most important features for taxonomic consideration. The protonymph is eight-legged and is characterized by dark dots and conspicuous spatulate setae. Deutonymphs are larger in size than protonymphs but with similar setae. The adult female measures about 400 μ in length and is larger than the male. Like other species of this genus, *B. chilensis* has few short dorsal setae, which differentiate it from the true red mites of the Tetranychidae family.

A fraction of the population of *Brevipalpus chilensis* overwinters in the buds of the vine and it is possible that this fraction is responsible for the main damage to the plant. The rest of the population overwinters rather on the canes and a very small number under the bark of the stem. In the spring, the mites attack the buds, weakening the plants and inhibiting partially or completely their normal development; the affected plants become grayish in color, giving the appearance of having sustained frost damage. Younger plants or plants grown in fertile soil are normally more resistant to the mite injury. The mites later infest the leaves,

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[1] BAKER, W. E. 1949. The genus *Brevipalpus* (Acarina: Pseudoliptidae). *Amer. Midland Nat.* 42 : 350-402.

[2] RIVERA, M. J. 1913. La introducción de insectos nocivos a Chile. *An. Soc. Agron. Chile* 3 : 154-161.

[3] LAVERGNE, G. 1901. Los ácaros parásitos de la vid. *Est. Patol. Veg.* (Chile) 12.

which curl and become smaller in size, and turn red in color. They become necrotic and fall prematurely. The number of mites observed on a single leaf varies from a few to a thousand or more. At the end of summer they congregate on the basal part of the lower side of the leaf before moving to overwintering sites. During winter the injurious effect of the mite becomes more noticeable, as the runners of the affected plant show significantly shorter internodes and their basal parts become necrotic and devoid of buds. It is curious to note, however, that the terminal buds always appear normal in development.

Farmers had hoped that sulphur applied as a control measure against powdery mildew (*Uncinula necator*) might simultaneously control this mite. This proved ineffective, probably due to the coarse particles of the sulphur used, or the application of sulphur dust instead of a liquid preparation. Recently, promising results have been obtained with newly developed acaricides, such as Karathane, Dimite, DN-111 and Chlorobenzilate. The vines should be treated at an early stage of bud formation, and later at intervals coinciding with main metamorphic changes of the mite. In addition to the use of chemicals, the control of weeds in and near vineyards will deprive the mite of other hosts.

Naupactus xanthographus

Naupactus xanthographus Germ., known as "burrito" or "capachito" in Chile, is prevalent in the Central Zone and occurs also in Argentina. The most obvious damage is caused by adults, which feed on grapevine shoots and leaves and are particularly injurious to young plants. They also attack citrus, avocado (*Persea gratissima*), medlar (*Eriobotrya japonica*) and, among the weeds, fennel (*Foeniculum vulgare*). The larvae cause root lesions and in severe cases may kill the vine.

The eggs are white, oval, and measure less than 1 millimeter in diameter. The white larvae attain 10 to 15 millimeters in length. Adults are dark coffee-colored, 11 to 18 millimeters long, and the females are larger than the males. Both sexes have only the primary pair of wings.

Although *Naupactus xanthographus* overwinters underground at a depth of 15 to 80 centimeters, adults may be found on various plants during July and August. The adults are prevalent on grapevines from October to March but are most numerous during December. The population decreases gradually from that time. The proportion of males tends to decrease toward the end of summer. The females oviposit in the soil of the vineyard or nearby, preferably in places where the content of organic matter is high. Larvae feed on various roots and on organic matter, and they are often found in the vicinity of vine roots. When a vine plant is surrounded by a large number of larvae, it will be killed and the death is often erroneously attributed either to *Phylloxera*, which does not exist in the country, or to virus diseases, which produce different symptoms.

Apparently no natural enemies of this pest exist in Chile and its larval population may vary from ten to a hundred or more per square meter. Insecticides have been tested for the control of adults as well as larvae. Good results were obtained with DDT, dieldrin and parathion, a spray containing a mixture of dieldrin and parathion being the most effective. BHC applied to the soil at a rate of 850 grams of gamma isomer per hectare killed as much as 64 percent of the larvae.

Ground pearl

The ground pearl, *Margarodes vitium* Giard, is known to occur in Argentina, Chile, Uruguay and Venezuela. In Chile it has been established with certainty that approximately 600 hectares of vineyards are infested, within areas from the Province of Aconcagua in the north to Ñuble Province in the south, and it can be assumed that the area where the insect occurs is much larger.

The ground pearl manifests characteristic symptoms on grapevine. The infested plant is dwarfed, producing only a few small and malformed leaves, and with greatly reduced yield. The plant dies after three or four years. In many affected vineyards replanting is routine but the new plants will be attacked again by cysts surviving in the soil. It is doubtful

whether the grapevine varieties grown in Chile possess resistance to this pest, as it was observed that a variety considered resistant in one place proved susceptible in another.

In addition to grapevine, underground cysts are found on the following plants: *Baccharis* spp., *Muhlenbeckia chilensis*, fennel (*Foeniculum vulgare*), *Trevoa trinervia*, *Cestrum parqui*, California poppy (*Eschscholzia californica*), linden (*Tilia europaea*), (*Acacia cavenia*) and eucalyptus (*Eucalyptus globulus*). It is said that cysts occur also on *Xanthium spinosum*, cardoon (*Cynara cardunculus*) and *Paspalum* spp.

In the life cycle of *Margarodes vitium*, the cyst stage is the most remarkable and easily detectable. The cyst has the form and size of a pea, is colored brown-orange when fully developed and has a strong offensive odor. From the cyst there emerges the female, which also lives underground and produces eggs apparently parthenogenetically. After an incubation period of 25 to 70 days, the white larva emerges, which is migratory until it attaches itself to a root. Little else is known of the life habits of this species and males have never been found.

Although evidence is not available, it is generally believed that there is a correlation between pH of the soil and the occurrence of *Margarodes vitium*. It appears also that the cysts are not found in great numbers in soils with a constant high moisture content. In vineyards which are not well leveled, cysts usually occur in greater density in the higher and drier parts. Based on these observations, repeated and deep irrigation is considered by most farmers to be the most effective control method, but it has only a temporary effect and is unsatisfactory, as it creates a serious weed problem. Insecticides with long-lasting residual effect have been tested and they may be efficiently used during two specific stages in the life cycle of the insect: when the females emerge from cysts and oviposit during the second half of November and part of December in the Central Zone, and when the migratory larvae emerge in mid-January. These two stages are more vulnerable to insecticides or irrigation than the cyst stage.

Although insecticides seem to provide a solution to this problem, experiments show that the recovery of the infested plant is often slow and the use of insecticides must be repeated every year as a routine. Most satisfactory results have been so far obtained with aldrin, at the rate of 1 kilogram of active ingredient per hectare and BHC at the same concentration of gamma isomer.

The possibility of biological control has not been fully explored, and at present R. Bobadilla at the National Entomological Station in La Cruz is carrying out investigations to determine whether a nematode-bacteria complex, which was discovered by S. R. Dutky in 1954, would attack *Margarodes vitium* as violently as certain other insect pests.

European peach scale

The widely distributed European peach scale (*Lecanium persicae* F.) is found in Chile from Aconcagua to Concepción in the south, and in some centers such as Talca, Curicó and Santiago, it is a permanent pest. As the life history of this insect is well known, only some ecological observations in Chilean vineyards are mentioned here.

The insects prefer to congregate compactly on young growing shoots, thus weakening them to such an extent that they become nonproductive. They also attach themselves to leaves, causing discoloration and defoliation. In additon to grapevine, this scale attacks peach, almond, prune, apricot, palms, raspberry, citrus, and forest and ornamental trees. It is often found in association with *Lecanium corni*, for which it can be mistaken.

In November, the female has a great number of eggs under her body. When the eggs hatch, the larvae invade the foliage and attach themselves to leaves or branches. In autumn, the second-stage larvae migrate from leaves to the stem and the cane, where they overwinter. In spring, they quickly invade leaves, grow in size, and reach the adult stage from September to October.

The action of natural enemies, such as *Metaphycus helvolus* Comp. and *M. flavus* How. does not appear to be efficient enough to reduce the need for insecticide treatment. In severely

infested areas, oil sprays at a concentration of 3.5 or 4 percent are applied during winter, and DDT dust is commonly used during the hatching period in spring.

Other pests

Micrapate scabrata Er. This small Bostrychid infests grapevine over a vast area of the country, extending from Coquimbo to Concepción. It bores into the canes, producing short, straight galleries. The adults are 3.5 to 5.5 millimeters long. They are brown in color and the pubescent elitra are reddish and dotted. The white larvae are apodous, and 3 to 5 millimeters long. There is no control method for this pest, other than removing attacked canes during autumn and winter by cutting.

Dexicrates robustus Blanch. A native of Chile, this Bostrychid beetle occurs very commonly in areas from Copiapó to Colchagua. It makes short galleries that usually start from a bud or node. The injury caused is serious to young plants, on which the beetle initiates its gallery at the place where the plant is affixed to the stake. Often the plant breaks at the level of the gallery. This insect also attacks avocado, plum, olive, and native trees and bushes. The adults are 7.5. to 15 millimeters long, dark coffee-colored, and shining. They are resistant to most insecticides but parathion gives satisfactory control.

Dyctineis pulvinosus Blanch. This Chrysomellid is also a native of Chile and is a pest of local importance in the Province of Coquimbo, especially in the Ovalle area. It destroys leaves and shoots of grapevine but causes probably the most serious damage by attacking growing and maturing grape clusters which, as a result, may fall prematurely.

Other coleopterous insects. There are two other coleopterous insects, the adults of which sometimes attack grape leaves: St. John's brown beetle, *Athlia rustica*, which occurs in areas from the Province of Coquimbo to Santiago, and the Curculionid *Strangaliodes mutuarius*, reaching from Curicó to Talca.

Grapevine moth. In some localities of the central provinces there is a small lepidopterous insect that causes damage similar to that incurred by grape berry moth, *Polychrosis viteana* (Clemens), in the United States. In 1956, J. F. G. Clarke of the United States National Museum studied material of this moth received from Chile and determined it as a species of *Eulia*, Tortricidae.

Thrips. A number of species of Thysanoptera have been found on grapevine. Some of them clearly cause abortion of the flowers. In fact, thrips injury appears to be the only satisfactory explanation for the production of thin bunches of grapes and other abnormalities. The influence of thrips on flowering and fruiting is at present under investigation.

Helix aspersa Müll. This snail occurs throughout the vine-growing areas, feeding on leaves and shoots. Growers usually collect it by hand and, to a limited extent, metaldehyde baits have been used for its control.

Octogon degus Molina. A native of Chile, this rodent is commonly found in the Central Zone of the country. It is diurnal and lives in burrows in the ground or inside loosely piled stones. Frequent and severe injuries to grapevine are known to occur in the vineyards of Casablanca, Province of Valparaiso, where ecological conditions seem to be particularly favorable to the pest. The vines are decorticated and killed. But this rodent seems to prefer to decorticate other woody plants, such as peach, espino cavan (*Acacia cavenia*), and *Vestia lycioides*. The writers found that *O. degus* feeds also on herbs, including *Erodium cicutarium*, *Sherardia arvensis*, *Stellaria* sp., *Bowlesia* sp., *Trifolium* sp., and a few species of Gramineae. It appears that this rodent plays an important part in the degradation of pastures in large areas of the Central Zone. Preliminary studies revealed that warfarin is effective for its control.

Lepus timidus L. The European hare is well established and widespread in Chile. Although it is hunted and trapped for meat and skin, it causes considerable damage to young vine plants, wheat, barley, oats, alfalfa, maize, potatoes, beans, watermelons, etc. On young vines, it eats the shoots primarily, and in orchards some plants such as young olive trees are often completely decorticated. Unlike the rabbits, it

lives in flat land and makes no burrows. The hare is resistant to mixomatosis, to which rabbits are susceptible. An efficient method of preventing losses, as applied in the Provinces of Coquimbo and Aconcagua, consists of fencing the field with cacti.

NEMATODES. Nematodes cause a strange disorder of grapevine, which is characterized by the presence of minute galls on roots. The first reliable reference to this disorder was made by Marcia Espinoza who, in 1916, found nematodes on grapevines at Rucapequén in the Province of Ñuble. However, he did not mention the identity of the nematodes involved. In 1942, nematodes found on grapevines from Punitaqui, Province of Coquimbo, were identified as a species of *Heterodera* and, six years later, a similar identification was made on material from Viña La Rosa in the Province of O'Higgins. However, it is still uncertain whether the species concerned belongs to the genus *Heterodera* or *Meloidogyne*.

Nematodes Associated with Arabica Coffee in India

P. Somasekhar,[1] Research Department, Coffee Board, Balehonnur

Arabica coffee, *Coffea arabica*, is subject to the attacks of various insect pests as well as nematodes. While satisfactory methods have been developed to control many of the insect pests, nematode control has been little studied. Present-day control measures consist mainly of early detection and isolation of infested areas and maintenance of proper sanitation. Young Arabica coffee plants less than five years old are especially susceptible to nematode attack. On the other hand, *Coffea robusta* has so far been found to thrive better in nematode-infested soil, where Arabica coffee has often failed.

Symptoms caused by nematode infestation

Symptoms caused by nematode infestation are often readily detected on the aerial parts of plants. Their foliage becomes lighter than normal, or yellowish green in color. Defoliation is frequent and it is not uncommon to find plants with scarcely any foliage at all. The real damage, however, occurs on the root system. In advanced stages, the taproot may become totally or partially destroyed and the number of lateral roots severely reduced. The surface of the affected taproot becomes spongy, manifesting a gnawed appearance. At the collar region, a bunch of adventitious roots develops. Heavily infested plants can be uprooted with very little effort. Due to the characteristic uneven distribution of nematodes in the soil, stunted and sickly plants occur in patches. In general, older plants are slower in showing symptoms, except when soil conditions favor an abundant buildup of the parasites.

Symptoms on the aboveground parts of affected coffee trees often become acute during summer, though the population of nematodes in the soil should normally remain at a low level During the rainy season, the plants might show some recovery, but due to the accelerated increase in the nematode population, coupled with migration to the top layer of the soil (even up to 6 inches from the soil surface), the renovated attack would considerably check the vigor and growth of plants.

It is known that a certain relationship exists between the quantity of organic matter present in the soil and the degree of nematode infestation. It has recently been observed that on a few estates, the addition of composted farmyard manure into badly infested areas improved the condition of growth of the plants. Presumably, one of the main reasons for this improvement is due to the increase in such soil of the number of predatory nematode species that are antagonistic to the parasitic species. Studies on this subject would be of great interest and might lead to economic and effective control of nematodes in coffee plantations.

Species involved

One of the earliest records on nematodes infesting coffee was made by Bally and Reydon,[2] who determined *Anguillulina similis* (Cobb.) and *Anguillulina pratensis* (de Man) as root parasites in Java. In India, infestation of Arabica coffee by *A. pratensis* was reported by Pattabhiraman.[3] Since then attempts have

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[1] The writer expresses his deep gratitude to Dr. M. A. Basir, Department of Zoology, Muslim University, Aligarh, U. P., for identifying the specimens. Thanks are also due to Dr. B. T. Narayanan. Director of Research, Coffee Research Station, Balehonnur, Mysore State, for the help and encouragement provided for these studies.

[2] Bally, W. and G. A. Reydon. 1931. De tegenwoordige stand van het vraagstuk van de wortelaaltjes in de koffiecultuur. *Archief voor de Koffie-cultuur* 5 (2) : 23-216.

[3] Pattabhiraman, T. W. 1949. The coffee eelworm *Anguillulina pratensis* (de Man, 1881). *Monthly Bull. Indian Coffee Board* 13 (8): 112-115.

TABLE 1. Distribution of nematodes in coffee-growing areas in South India

Locality	Predatory species	*Radopholus similis*	*Tylenchorhynchus* sp.	*Xiphinema insignis*	*Pratylenchus pratensis*	*Rhabditis* sp.
North Mysore						
Belagode	+[a]	+	+	—	—	+
Ossoor	+	+	+	+	—	+
Hemavathi	+	+	+	—	—	+
South Mysore						
Athoor	—	+	+	—	—	+
Wooligooly	+	+	+	—	+	+
Nellur	+	+	—	—	—	+
Perumbucolly	+	+	+	—	—	+
Coovercolly	+	+	+	—	—	+
Yemmigundi	+	+	+	—	—	+
Madras State						
Sekharan, Pulneys	—	+	—	—	—	+
Kerala State						
Cottanad, Wynaad	+	+	+	—	—	+

[a] + indicates presence; — indicates absence.

been made to determine the nematode species in various coffee zones. Toward this end, examination of soil and plant samples collected from various sources was undertaken by the Division of Entomology, Coffee Research Station, Balehonnur, and revealed the occurrence of several species of predatory, parasitic and free-living nematodes.

The predatory species of the genera *Mononchus*, *Cephalobus*, and *Ironus*, were present in many soil samples from North and South Mysore. The ectoparasites, which have been previously reported by the writer,[4] *Radopholus similis* (Cobb.) Thorne, *Tylenchorhynchus* sp., and *Xiphinema insignis* Loos., were found in samples from North and South Mysore. The former two species were also present in samples from Wynaad, North Kerala, while only *R. similis* was found in Pulneys, Madras State. The free-living form, *Rhabditis* sp., was abundant in many samples. Another parasite, *Pratylenchus pratensis* (de Man) Filipjev, was present in soil and plant samples from an estate in South Mysore (North Coorg). Among the parasitic species, *R. similis* and *Tylenchorhynchus* sp. were more often encountered than *X. insignis* and *P. pratensis*.

Table 1 summarizes the distribution of various species of nematodes in different coffee-growing areas. In general, the soils of the areas examined varied from sandy to clayey.

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[4] SOMASEKHAR, P. 1958. Pests of coffee and their control. *Indian Coffee* 22 : 220-246.

Outbreaks and New Records

ARGENTINA

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A serious epiphytotic of late blight of tomato

The occurrence of late blight (*Phytophthora infestans*) has been recorded several times on potatoes and tomatoes in various parts of Argentina, sometimes causing heavy losses. The damage observed in the present case is, however, likely to be one of the most severe ever registered in the country.

The affected area (latitude 23° 23′ S. and longitude 64° 20′ W.), Santa Rosa, Department Urundel, Province of Salta, is situated in the northwestern part of the country, at an altitude of about 300 meters. The main crops are tropical and subtropical fruit (citrus, bananas, etc.) and vegetables such as tomatoes, peppers, eggplants and cucurbits. About 5,000 hectares are under tomatoes, the variety most commonly grown being *Platense raya verde*, which possesses resistance to tomato spotted wilt virus and which has good keeping quality. Fruits are picked from the end of April until October to November. From June to September this area is the only one in the entire country where tomatoes are produced.

In the early part of 1958, until the beginning of May, tomato plants in this area were rather free from diseases and pests, and an average yield of 35,000 kilograms per hectare was expected when picking started. Late blight appeared on 1 May, and during the following two days nearly all tomato plants were destroyed on 1,800 to 2,000 hectares, resulting in a loss of 95 percent of the crop. The spread of the disease was obviously favored by the extremely high humidity, morning fog, lack of sunshine, and warm temperatures between 18° and 20° C.

The sudden appearance of the epiphytotic and the spectacular destruction of the crop, caused the growers to resort to such desperate measures as the use of watering pots for spraying fungicides. Following the epiphytotic, large piles of waste tomatoes were seen at roadsides.

Among the fungicides used, the only one which proved effective in controlling late blight was manganese ethylene bisdithiocarbamate (Manzate). The few fields which had been treated with this chemical regularly at intervals of ten days since the beginning of flowering, and which had received three to four treatments at the time of outbreak, were saved from destruction.

REPUBLIC OF CHAD

Comité français de l'Organisation des Nations Unies pour l'Alimentation et l'Agriculture

Occurrence of tristeza disease of citrus

Tests carried out on Mexican lime, sour orange and *Aeglopsis*, with the kind assistance of M. P. Frezal, Director of Agronomic Research of Algeria, revealed the presence of tristeza virus in citrus trees grown at Fort-Lamy. As citrus planting materials have been distributed from the Fort-Lamy Station, there is no doubt that the disease has spread throughout the country. Measures are being taken to uproot citrus trees in Largeau (Faya) in the northern part of the country, in order to prevent the introduction of tristeza into North Africa.

Plant Quarantine Announcements

BRAZIL

Ministerial Order of 2 January 1959, issued by the Ministry of Agriculture, published in the *Diario Oficial* No. 4 of 6 January 1959, regulates the importation of plant material of Pará rubber (*Hevea* spp.) into the country. The importation of seed, seedlings, cuttings, and any living parts of *Hevea* spp., is prohibited. The Ministry of Agriculture, however, has the right to import small quantities of the above-mentioned materials or authorize the state governments to do so, if the material is intended for experimental purposes in their experimental stations, and if quarantine measures prescribed by the plant protection division are observed.

SURINAM

Government Decree No. 96 of 2 December 1958, which is amended by Government Decree No. 13 of 16 February 1959, supplements Government Decrees of 28 September 1928 and 13 January 1932, governing the importation of living plants, parts thereof, and their packings.

Decrees of 1928 and 1932 provide that the importation of living plants, parts thereof, and packings of sugar cane, coffee, cassava, cacao, citrus, plantain, banana, cotton, pineapple, tobacco, green manure crops and all species of palms may be authorized by the director of the agricultural experiment station, if each shipment is accompanied by a phytosanitary certificate issued by the authorized service of the country of origin and legalized by the Netherlands Consulate at the point of departure. In most cases the plant materials will be held under quarantine for a certain period of time at the agricultural experiment station. Used empty bags destined for importation should be accompanied by a fumigation certificate. Plants or parts thereof, other than those mentioned above, if suspected to harbor pests or diseases, may be held under quarantine or destroyed.

Decrees No. 96 and No. 13 of 1959 provide that living plants, parts thereof, and their packings of rice, pulses, potatoes, onions, fruit, vegetables and ornamental plants, may be imported only if each shipment is accompanied by a phytosanitary certificate issued by the competent service of the exporting country and established in accordance with the International Plant Protection Convention of 1951.

UNITED KINGDOM (England and Wales)

The Importation of Potatoes Order 1959, which came into operation on 25 February 1959, re-enacts with modifications the restrictions on the importation of potatoes formerly contained in the Importation of Plants Order 1955 (see *FAO Plant Prot. Bull.* 3 : 60-62. 1955) and revoked by the Importation of Plants (Amendment) Order 1959.

Potatoes for planting. The importation of potatoes for planting remains prohibited.

Main crop potatoes. Potatoes other than potatoes for planting or new potatoes may be imported from the following countries or parts of countries: Belgium, Canary Islands, Cyprus, Denmark, Federal Republic of Germany (the provinces of Schleswig-Holstein and Lower Saxony, north of latitude 54° N.), France (excluding the Department of Finistère), Israel, Luxembourg, Netherlands, Norway, and Sweden.

New potatoes. New potatoes many be imported from the following countries or parts of countries during the periods specified:

January 1 to December 31. Algeria, Belgium, Canary Islands, Cyprus, Denmark, Greece, Israel, Italy (Regions of Apulia, Basilicata, Calabria, Campania and Sicily), Kenya, Lebanon, Libya, Luxembourg, Madeira, Malta and Gozo, Morocco, Netherlands, South Africa, Spain (Balearic Islands), Sweden, Tunisia, United Arab Republic-Egypt.

March 1 to June 15. Federal Republic of Germany (the provinces of Schleswig-Holstein and Lower Saxony, north of latitude 53° N.), France.

March 1 to May 20. Italy (Region of Latium), Portugal, Spain (mainland).

Certification. All consignments of potatoes must be accompanied by a phytosanitary certificate in the prescribed form. In the case of potatoes which have not been imported directly from the country in which they were grown, and where the containers have been opened or the potatoes exposed in any way to the risk of contamination, each consignment must be also accompanied by a supplementary certificate issued by the re-exporting country in the prescribed form.

Requirements

(*a*) The potatoes must have been grown at a distance of at least 2 kilometers from any place where wart disease (*Synchytrium endobioticum*) or ring rot (*Corynebacterium sepedonicum*) has occurred at any time.

(*b*) The potatoes are free from tuber moth (*Gnorimoschema operculella*), wart disease and ring rot.

(*c*) With regard to Colorado beetle (*Leptinotarsa decemlineata*), the requirements are that:

(*i*) either during the preceding 12 months there was no outbreak of Colorado beetle within a distance of 25 kilometers of the growing place and the potatoes are packed in new bags or containers;

(*ii*) or that the potatoes were grown in a district where an intensive system of control of Colorado beetle is in operation, that they have been riddled (and thoroughly washed in the case of new potatoes) in an approved packing station and then immediately packed in new bags or containers, indicating the name of the packing station, and are free from soil and Colorado beetle.

UNITED STATES

A Foreign Quarantine notice of 8 September 1958, published in the *Federal Register*, Vol. 23, No. 178, on 11 September 1958, amends Quarantine No. 37 relating to the importation of nursery stock, plants and seeds.

Under the provisions of Quarantine No. 56, a number of fruits are authorized for importation without treatment. By the new amendment, the importation of the seeds of such fruits is permitted even without fulfilling the requirement that they must be free of pulp, if they are imported for propagation.

The new amendement also provides that all plants and cuttings of genera, the importation of which is not prohibited but which are known hosts of citrus black fly (*Aleurucanthus woglumi*), imported from all foreign countries (except Canada, countries in Europe and Asia Minor, and those countries of Africa bordering the Mediterranean Sea) must be defoliated before shipment from the country of origin, if they are to be imported through any port other than the ports of New York and Seattle.

Administrative instructions of 8 September 1958, published in the same issue of the *Federal Register*, designate the following genera as known hosts of citrus black fly, whose entry is not specifically prohibited:

Achras	*Jatropha*
Anacardium	*Lagerstroemia*
Annona	*Lucuma*
Ardisia	*Magnolia*
Bouvardia	*Mammea*
Bumelia	*Mangifera*
Bursera	*Melia*
Buxus	*Myroxylon*
Calocarpum	*Myrtus*
Capsicum	*Parmentiera*
Cardiospermum	*Persea*
Cedrela	*Plumeria*
Cestrum	*Populus*
Cnidoscolus	*Psidium*
Coffea	*Punica*
Crataegus	*Pyrus*
Cydonia	*Sapindus*
Diospyros	*Solandra*
Duranta	*Spondias*
Eugenia	*Strelitzia*
Fraxinus	*Tabebuia*
Hibiscus	*Vitis*
Hura	*Zingiber*
Ixora	

News and Notes

INTERNATIONAL ORGANIZATION OF CITRUS VIROLOGISTS

During the first Conference on Citrus Virus Diseases, held at Riverside, California, in November 1957, in connection with the 50th anniversary of the University of California Citrus Experiment Station, participants resolved to establish an International Organization of Citrus Virologists (IOCV), in order to promote international co-operation on citrus virus research. Dr. J.M. Wallace of the University of California was elected chairman of the new group and the following committees have been appointed.

- Committee on Arrangements and Program
- Committee on Bibliography
- Committee on Finance and Membership
- Committee on Indexing Procedures, Diagnosis, and Nomenclature
- Committee on Liaison with Other Organizations
- Committee on Rootstocks and Nucellar Clones
- Committee on Publication

IOCV is expected to hold conferences every two years and the proceedings of these conferences will be published. The second conference will take place in Florida in the autumn of 1960, and the third conference may be held in 1962 or 1963 in the Mediterranean area.

IOCV invites all persons interested in citrus virus problems to become members of the organization. Enquiries should be addressed to Dr. J.M. Wallace, Department of Plant Pathology, University of California, Riverside, California.

INSECT TOXICOLOGISTS' INFORMATION SERVICE

During the Tenth International Congress of Entomology, held in Montreal in August 1956, a special meeting of insect toxicologists was convened at the initiative of Dr. D. Dresden of the Laboratory for Research on Biocides, National Council for Applied Scientific Research in the Netherlands, to discuss the organization of an Insect Toxicologists' Information Service (ITIS). As a result, the congress adopted a resolution indicating that congress members agree to co-operate with Dr. Dresden in establishing the proposed service.

ITIS is aimed at facilitating exchange of information among research workers who are actively engaged in studies in insect physiology, especially in the mode of action of toxicants. It is expected that it will function in a similar manner as the Drosophila Information Service.

The first number of the ITIS Bulletin appeared in 1958. It contains a geographic directory listing institutions and research workers engaged in insect toxicology investigations in various countries, together with fields of interest, and insects being bred in the laboratory. In addition, there are notes describing research projects in progress, and a current bibliography. The Bulletin is to be published annually and is available gratis to all insect toxicologists who contribute to it.

All enquiries regarding ITIS, as well as contributions, should be addressed to Dr. D. Dresden, Laboratory for Research on Biocides, T.N.O., Vondellaan 6, Utrecht, Netherlands.

WORKING GUIDE FOR PLANT QUARANTINE INSPECTORS

To remedy the deficiency in technical personnel required for the effective enforcement of plant and animal quarantine in its area, the Organismo Internacional Regional de Sanidad Agropecuaria (OIRSA), in co-operation with the United States International Co-operation Administration, United States Department of Agriculture, the Interamerican Institute of Agricultural Sciences, and FAO, has launched an intensive training program. A short course in quaran-

tine has been organized annually since 1956 at Turrialba to provide essential training, and a limited number of students have been selected to pursue further studies at the quarantine course in New York organized by the Plant Quarantine Division of the United States Department of Agriculture. This training program prepares many of the officers now working in quarantine in Central America.

In view of the fact that teaching material required for the training of quarantine personnel is not generally available, and that many of the quarantine inspectors in the OIRSA region still lack adequate experience in quarantine enforcement, a *Working Guide for Plant Quarantine Inspectors* has been prepared by G. H. Berg, FAO expert on plant quarantine assigned to OIRSA.

Although it is primarily intended for use in the OIRSA region, this Guide is sufficiently general to be useful in other countries where the rapid development of plant quarantine activities may create a need for personnel training.

It has therefore been issued in English in mimeographed form, and can be obtained from the Crop Protection Branch, Plant Production and Protection Division, FAO, Rome, Italy. The Spanish version is available at OIRSA, Apartado 434, Managua, D. N., Nicaragua.

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